(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization

International Bureau



Rec'd PCT/PTC 13 DEC 2004

(43) International Publication Date 31 December 2003 (31.12.2003)

PCT

(10) International Publication Number WO 2004/001855 A1

(51) International Patent Classification⁷: 51/00

H01L 29/786,

(21) International Application Number:

PCT/JP2003/007792

(22) International Filing Date:

19 June 2003 (19.06.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

NO. 2002-179468

20 June 2002 (20.06.2002) JI

(71) Applicant (for all designated States except US): CANON KABUSHIKI KAISHA [JP/JP]; 3-30-2, Shimomaruko, Ohta-ku, Tokyo 146-8501 (JP).

(72) Inventor; and

(75) Inventor/Applicant (for US only): UNNO, Akira [JP/JP]; c/o CANON KABUSHIKI KAISHA, 3-30-2, Shimomaruko, Ohta-ku, Tokyo 146-8501 (JP).

(74) Agents: OKABE, Masao et al.; No. 602, Fuji Bldg., 2-3, Marunouchi 3-chome, Chiyoda-ku, Tokyo 100-0005 (JP).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

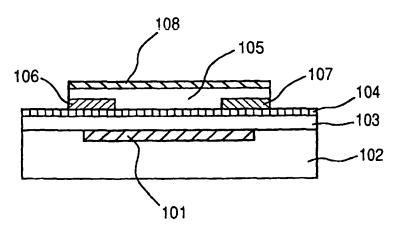
(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: ORGANIC SEMICONDUCTOR ELEMENT, PRODUCTION METHOD THEREFOR AND ORGANIC SEMICONDUCTOR DEVICE



(57) Abstract: An organic semiconductor element is provided which has the controlled crystalline state of a vapor-deposited pentacene layer and a high mobility with low voltage driving. The organic semiconductor element is formed by providing a gate electrode 101 on the surface of a substrate 102, providing thereon a gate insulating layer 103, providing on the surface of the gate insulating layer 103 an island-shaped protrusion layer 104 having dispersed and island-shaped protrusions with a low surface energy, providing on the island-shaped protrusion layer 104 a source electrode 106 and a drain electrode 107 with a distance therebetween,

providing thereon an organic semiconductor layer 105 in contact with the island-shaped protrusion layer 104 and both electrodes 106 and 107, and further providing a protective film 108 on the organic semiconductor layer 105.

7O 2004/001855 A1 ||||||